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**PATENT SPECIFICATION** **620,460**



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PROVISIONAL SPECIFICATION

**Improvements in Anti-Friction Suspension Rails for  
Drawers and the like**

We, HARRIS & SHELDON LIMITED, a Company registered under the laws of Great Britain, of 31, Stafford Street, Birmingham, 4, JOSEPH SANKEY & SONS LIMITED, a Company registered under the laws of Great Britain, of Albert Street, Bilston, Staffordshire, and HAROLD GUY BUTLER, British Subject, of 46, Cannon Street, London, E.C.4, do hereby declare the nature of this invention to be as follows:—

This invention relates to suspension means for drawers and the like, and of that kind comprising at each side of the drawer or the like, a plurality of relatively-slidable interengaging rails, with balls or anti-friction elements between them; namely a fixed rail, adapted to be attached to the drawer casing or other fixed part, a movable rail adapted to be attached to the drawer or the like, and a suspension rail interposed between the said fixed rail and movable rail.

The object of the invention is to provide drawer suspension means of the above kind of an improved and novel construction, which may be cheaply manufactured, and whereby the interengaging rails are interlocked or are prevented from lateral displacement without the necessity for transverse tie-bars, or like auxiliary retaining means, between the rails at the two sides of the drawer or the like.

According to the invention, anti-friction suspension means for a drawer or the like comprises a plurality of interposed or interengaging rails, with balls or anti-friction elements between them; namely a fixed rail secured, or adapted to be secured, to the drawer casing or other support, a movable rail attached, or adapted to be attached to the drawer or the like, and an intermediate suspension rail, the said rails being of a channel section, with the channels set on edge and with the side walls of the channels disposed at the top and bottom, the side walls of the channel of the intermediate rail having

inturned flanges, and the flange of the bottom side wall of the said intermediate rail extending behind a flange of one of the adjacent rails and being outwardly bent or cranked to extend up over, or in front of, the other adjacent rail, the arrangement being such as to prevent a relative lateral movement between the lower portions of the three rails, or to allow of only a restricted relative movement. The channels of the drawer rail and intermediate rail may be opposed to one another, and both the intermediate rail and the fixed rail may have inturned flanges, the drawer rail consisting of a plain channel without flanges. The side walls of the three rails may be spaced vertically apart by balls, with the lower portion of the intermediate rail extending into the lower portion of the fixed rail, and with the flange of the said lower portion of the intermediate rail lying behind, or inwards of, the adjacent flange of the fixed rail and being then cranked outwards so that its upper or outer edge lies over or in front of the vertical outer face of the drawer channel.

Thus, in carrying out the invention, the improved drawer-suspension means comprises, at each side of the drawer three relatively-slidable rails, the said rails, which are disposed one within the other, being each of a channel section, the three channels being disposed vertically on edge with their side walls disposed at the top and bottom, the side walls of all of the channels being integral with, and at right-angles to, the middle portions of the channels and lying in vertically-spaced horizontal planes, in which position they are maintained by interposed anti-friction balls. The three rail channels are of varying widths to enable them to engage one within the other, and the widest channel is secured to a wall of the drawer casing or analogous fixed part; being, for example, detachably secured thereto by hooks, or being otherwise fixed. The

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narrowest of the three channels or rails, on the other hand, is secured to the adjacent side of the drawer, and the remaining channel or rail is interposed between the aforesaid fixed channel and the drawer channel, and is, in effect, floating, being supported by the anti-friction balls. This intermediate channel or rail lies almost wholly within the wider fixed channel, whilst the latter and the said intermediate channel have their interiors presented in the same direction, that is towards the side of the drawer. The drawer channel, on the other hand, is presented towards the intermediate channel and lies substantially wholly within the same.

The upper and lower sides of the fixed channel or rail of the drawer suspension means are provided throughout their length with opposed integral inwardly-directed flanges, which lie at right-angles to the said sides in the same vertical plane, or, if desired, in parallel vertical planes; whilst the upper and lower sides of the intermediate channel or rail are also formed throughout their length with integral inwardly-directed flanges. The opposed drawer channel or rail, on the other hand, consists of a plain channel member without intumed flanges. Anti-friction balls are disposed between the upper side wall of the fixed rail or channel and the upper side wall of the intermediate rail or channel, and likewise between the upper side wall of the said intermediate rail or channel and the upper side wall of the drawer rail or channel. The bottom side wall of the said drawer rail or channel is supported by balls which rest upon the bottom side wall of the fixed rail or channel, these balls projecting through, and being confined by, slots or apertures in the bottom side wall of the intermediate channel, the latter side wall lying preferably below the widest portions of the balls. The three sets of anti-friction balls serve to maintain the three rails or channels in vertically-spaced relationship. Suitable stops or projections may be provided for limiting the travel of the balls, and for preventing them from falling out of place when the rail or channel assembly is removed.

Means are provided for interlocking the lower portions of the three channels at each side of the drawer, or for preventing

the said lower portions of the three channels from moving laterally, or from undue lateral movement, relatively to one another. For this purpose, the inwardly-extending flange of the bottom side wall of the intermediate rail or channel is of a stepped formation throughout its length. Thus, the said flange extends first inwardly or upwardly from the said bottom side wall, so as to lie at right-angles thereto, and is then cranked horizontally outwards. Finally, the outer edge portion of the said flange is bent upwardly to lie at right-angles to the horizontal cranked portion. The lower portion of the said intermediate channel is thus of a trough formation, with the upper portion of the trough wider than the lower portion, owing to the stepped formation of its one side.

When the three rails or channels are assembled, the narrower portion of the lower part of the intermediate rail fits into the trough formed by the intumed flange of the fixed channel or rail, and the horizontal cranked portion of the stepped flange of the lower part of the intermediate rail extends over the edge of the adjacent flange of the fixed channel and then extends upwards so as to lie outside of, or in front of, the main vertical middle wall of the drawer channel, the latter being fixed to the side of the drawer so that its lower half projects down below the bottom of the drawer. The lower portions of all three rails or channels are thus prevented from lateral movement and no transverse tie-bars or other auxiliary parts are necessary to keep the lower parts of the rails or channels in engagement or in their proper relative positions.

The lower vertical portion of the cranked flange of the intermediate channel or rail may engage, or lie close to, the lower set of balls, so that it serves to centre the latter, whilst the lower portion of the fixed rail or channel may be slightly wider than the upper part of the said rail. Both the upper and the lower parts of the drawer rail or channel are of the same width.

Dated this 18th day of January, 1947.  
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#### COMPLETE SPECIFICATION

#### Improvements in Anti-Friction Suspension Rails for Drawers and the like

We, HARRIS & SHELDON LIMITED, a Great Britain, of 31, Stafford Street, Birmingham, 4, JOSEPH SANKEY & SONS

LIMITED, a Company registered under the laws of Great Britain, of Albert Street, Bilston, Staffordshire, and HAROLD GUY BUTLER, British Subject, of 46, Cannon Street, London, E.C.4, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

10 This invention relates to suspension means for drawers and the like, and of that kind comprising at each side of the drawer or the like, a plurality of relatively-slidable interengaging rails, with  
15 balls or anti-friction elements between them; namely a fixed outer rail, adapted to be attached to the drawer casing or other relatively fixed part, a movable inner rail adapted to be attached to the  
20 drawer or the like, and an intermediate extension rail interposed between the said fixed rail and movable rail, the said rails being each of a channel section with the channels set on edge and with the side  
25 walls of the channels disposed at top and bottom, and the side walls of the channel of the intermediate rail and of one of the adjacent rails having intumed flanges with the flange of a side wall of the said  
30 intermediate rail disposed opposite the inside face of a flange of the said flanged adjacent rail.

The object of the invention is to provide  
35 drawer suspension means of the above kind of an improved and novel construction, which may be cheaply manufactured, and whereby the interengaging rails are interlocked or are prevented from undue lateral displacement without the  
40 necessity for transverse tie-bars, or like auxiliary retaining means, between the rails at the two sides of the drawer or the like.

In a previous proposal the interengaging rails of suspension means of the kind referred to have been laterally interlocked by making the lower portion of the inner or movable rail (which is attached to the drawer or the like) of stepped form, or of less width than its upper portion, thus adapting this reduced lower portion to be inserted and confined laterally in the bottom channel portion of the intermediate extension rail between the web  
55 and the upturned bottom flange portion thereof.

According to the present invention, in suspension means, of the kind referred to, for drawers and the like, the interengaging rails are laterally interlocked by outwardly bending or cranking the flange of the side wall of the intermediate rail which is disposed opposite the inside face of a flange of the one  
65 adjacent rail, so as to lie opposite an out-

side face of the other adjacent rail.

The accompanying drawing represents a sectional view of a drawer fitted with suspension means constructed in accordance with this invention.

Referring to the drawings, the improved drawer-suspension means comprises, at each side of the drawer 8 three relatively-slidable rails 1, 2 and 3, the said rails, which are disposed one within the other, being each of a channel section, the three channels being arranged vertically on edge with their side walls, 1<sup>a</sup>, 2<sup>a</sup> and 3<sup>a</sup> respectively, disposed at the top and bottom, as shown, the side walls of all of the channels being integral with, and at right-angles to, the middle portions or bottoms of the channels and lying in vertically-spaced horizontal planes, in which position they are maintained by interposed anti-friction balls 4, 5 and 6. The three channelled rails 1, 2 and 3 are of varying widths to enable them to engage one within the other, and the widest channel 1 is secured in any suitable manner to a wall 7 of the drawer casing. The narrowest of the three channels or rails, on the other hand, namely the rail or channel 3, is secured to the adjacent side of the drawer 8, and the remaining channel or rail 2 is interposed between the aforesaid fixed channel 1 and the drawer channel 3, and is, in effect, floating, being supported by the said anti-friction balls 6, of which any number  
100 may be provided. This intermediate channel or rail 2 lies almost wholly within the wider fixed channel 1, whilst the latter and the said intermediate channel 2 have their interiors presented in the  
105 same direction, that is towards the side of the drawer 8. The drawer channel 3, on the other hand, is presented towards the intermediate channel 2 and lies substantially wholly within the same, as  
110 shown.

The upper and lower side walls 1<sup>a</sup> of the fixed channel or rail 1 of the drawer suspension means are provided with opposed integral inwardly-directed  
115 flanges, 1<sup>b</sup> and 1<sup>c</sup> respectively, which lie at right-angles to the said sides in parallel vertical planes; whilst the upper and lower sides 2<sup>a</sup> of the intermediate channelled or rail 2 are also formed with  
120 integral inwardly-directed flanges 2<sup>b</sup> and 2<sup>c</sup>. The opposed drawer channel or rail 3, on the other hand, consists of a plain channel member without intumed flanges. Anti-friction balls 4 are  
125 disposed between the upper side wall 1<sup>a</sup> of the fixed rail or channel 1 and the upper side wall 2<sup>a</sup> of the intermediate rail or channel 2, and balls 5 are likewise disposed between the  
130

upper side wall 2<sup>a</sup> of the said intermediate rail or channel 2 and the upper side wall 3<sup>a</sup> of the drawer rail or channel 3. The balls 6 which support the said  
 5 drawer rail or channel 3 rest upon the bottom side wall 1<sup>a</sup> of the fixed rail or channel 1, these balls 6 each projecting through, and being confined by, a slot or aperture 9 in the bottom side wall 2<sup>a</sup> of  
 10 the intermediate channel 2, the latter side wall lying preferably below the widest portions of the balls, as illustrated. The three sets of anti-friction balls 4, 5 and 6 serve to maintain the three rails or chan-  
 15 nels 1, 2 and 3 in vertically-spaced relationship. Suitable stops or projections may be provided for limiting the travel of the balls, and for preventing them from falling out of place when the rail or  
 20 channel assembly is removed. Stops are also provided for limiting the relative sliding movement of the channels or rails.

Means are provided for interlocking the  
 25 lower portions of the three channels 1, 2 and 3 at each side of the drawer 8, or for preventing the said lower portions of the three channels from undue lateral movement relatively to one another. For  
 30 this purpose, the inwardly-extending flange 2<sup>c</sup> of the bottom side wall of the intermediate rail or channel 2 is of a stepped formation throughout its length. Thus, the said flange 2<sup>c</sup> extends first  
 35 inwardly or upwardly from the said bottom side wall 2<sup>a</sup>, so as to lie at right-angles thereto, and is then cranked horizontally outwards. Finally, the outer edge portion 11 of the said flange 2<sup>c</sup> is  
 40 bent upwardly to lie at right-angles to the horizontal portion 10. The lower portion of the said intermediate channel 2 is thus of a trough formation, with the upper portion of the trough wider than the lower  
 45 portion, owing to the stepped formation of its one side.

When the three rails or channels 1, 2 and 3, are assembled, the narrower portion of the lower part of the intermediate  
 50 rail 2 fits into the trough formed by the inturned flange 1<sup>c</sup> of the fixed channel or rail 1, and the horizontal portion 10 of the stepped flange 2<sup>c</sup> of the lower part of the intermediate rail 2 extends over the  
 55 edge of the adjacent flange 1<sup>c</sup> of the fixed channel 1, the upwardly-extending part

11 of the said flange 2<sup>c</sup> lying outside of, or in front of, the main vertical middle wall or upstanding bottom portion of the drawer channel 3, the latter being fixed  
 60 to the side of the drawer 8 so that its lower part projects down below the bottom of the drawer. The lower portions of all three rails or channels 1, 2 and 3 are thus prevented from lateral movement and no  
 65 transverse tie-bars or other auxiliary parts are necessary to keep the lower parts of the rails or channels in their proper relative positions.

The lower vertical portion of the  
 70 cranked flange 2<sup>c</sup> of the intermediate channel or rail 2 engages, or lies close to, the lower set of balls 6, so that it serves to centre the latter, whilst the lower portion of the fixed rail or channel  
 75 1 may be slightly wider than the upper part of the said rail, as shown. The lower wall 3<sup>a</sup> of the drawer rail or channel 3 may be slightly wider than the upper wall.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. Suspension means, of the kind referred to, for drawers and the like, wherein the interengaging rails are laterally interlocked by outwardly bending or cranking the flange of the side wall of the intermediate rail which is disposed opposite the inside face of a flange of the one adjacent rail, so as to lie opposite an outside face of the other adjacent rail.

2. Suspension means for drawers and the like as claimed in claim 1, in which the lower flange of the intermediate rail comprises an upstanding part opposed to the inside face of the bottom flange of the flanged outer rail, and an outwardly-cranked part an upwardly-extending portion of which lies opposite the outside face of the bottom portion of the inner movable channel rail.

3. Suspension means for drawers and the like as herein described with reference to the accompanying drawings.

Dated this 16th day of October, 1947.

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 24, Temple Row, Birmingham, 2,  
 Agents for Applicants.

[This Drawing is a reproduction of the Original on a reduced scale.]

